

Remarks

Claims 11-25 are currently pending in the application. Claims 1-10 have been canceled. Independent claim 11 has been added to more particularly point out that a conveying roller shaft is movable along a direction corresponding to the thickness of a medium when the medium is conveyed and that a pressing member extends along a length of said shaft and is made of a rigid material and presses the conveying roller shaft. Claims 12-21, which are dependent upon new claim 11, have been added to incorporate the subject matter of canceled claims 2-10. Independent claim 22 has been added to more particularly point out that a conveying roller is movable along a thickness direction of a medium, a pressing member extends in an axis direction of said conveying roller and provides a force to a shaft of the conveying roller toward a conveying path of said medium, and to describe the apparatus in operation. Claims 23-25, which are dependent upon new claim 21, have been added to incorporate certain subject matter of canceled claims 2-10.

New claims 11-25 are at least supported by the original claims, Figs. 1 and 7-12 and specification paragraphs [0059], [0063], [0066], [0067] and [0069]. Accordingly, no new matter has been added.

Claim Rejections - 35 U.S.C. § 102(b)

The Examiner has rejected claims 1-10 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,129,749 (Sato). The Examiner asserts that Sato discloses each and every element of the claims. Applicant respectfully submits that the rejection of claims 1-10 is moot in view of the cancellation of claims 1-10.

New Claims 11-25

Applicant has added claims 11-25. Applicant respectfully submits that new independent claims 11 and 22 are patentable over Sato for at least the below-described reasons.

Referring to Figs. 1-5, Sato discloses a printer provided with a pinch roller release mechanism designed to facilitate removal of jammed print medium sheets. The printer includes an upper roller 2, a lower roller 1 and a print medium path defined therebetween. In operation, a pressing lever 13, which is rotatably supported by a traverse shaft 6, is capable of both applying

a pressing force on a spring holder 5 and moving away from the spring holder 5 to release the pressing force. Further, a plurality of pressing springs 3 are fixed at one end to the spring holder 5, which is also rotatably supported by the traverse shaft 6, and are provided at their free ends with a bearing piece 4. As seen in Fig. 2, the bearing pieces 4 transmit the pressing force of the pressing lever 13 to the upper roller 2 when the operating lever 13 is in the printing configuration. Consequently, the pressing force is uniformly distributed from the upper roller 2 through a print medium sheet 9 to the lower roller 1. As seen in Fig. 3, when jamming of the medium 9 occurs, the lever 13 is angularly displaced counterclockwise by 90 degrees around the traverse shaft 6. Consequently, the spring holder 5, pressing springs 3 and bearing pieces 4 are made free to be displaced upward vertically (col. 2, ln. 63 through col. 3, ln. 5).

The present application is directed to a medium conveying apparatus which can stabilize a medium, such as paper, and covey it by a sufficient conveying force to prevent the medium from being obliquely conveyed. As shown in Figs. 1 and 7-12, the medium conveying apparatus includes upper 65 and lower 66 rollers mounted on upper 63 and lower 64 conveying shafts, respectively. A tension plate 75, which is formed of a rigid material and is supported by side frames 12, 13 of the medium conveying apparatus, acts as a pressing member and is supported to swing freely around each fulcrum portion 74 as a center. A plurality of tension springs 78, or force providing members, urge the tension plate 75 to press the upper shaft 63 via guide pieces 76, thereby pressing the upper roller 65 toward the lower roller 66 by a predetermined pressing force. When the medium is conveyed to pass underneath only a portion of the upper shaft 63 (Fig. 11), a first end of the shaft 63 is moved upward by the medium. As a result, the tension plate 75 receives a force from the first end of the shaft 63, which in turn moves all of the springs 78 upward. Since the entire rigid tension plate 75 is moved upward, the pressing force is not applied to a second, opposite end of the shaft 63 and the entire shaft 63 moves upward in a uniform manner parallel to the lower shaft 64.

New claim 11 is directed to a medium conveying apparatus and recites:

a conveying roller shaft movable along a direction corresponding to the thickness of a medium when the medium is conveyed; and

a pressing member extends along a length of said shaft and is made of a rigid material and presses the conveying roller shaft.
[Emphasis added]

Sato does not disclose a pressing member that extends along a length of the shaft and is made of a rigid material and presses the shaft. In the second paragraph on page 2 of the Office Action, the Examiner identifies the shaft 2a of the upper roller 2 and the pressing springs 3 of Sato as the conveying roller shaft and the at least one force providing member, respectively. Although it is not numerically identified by the Examiner in the Office Action, Applicant assumes that the Examiner asserts that the spring holder 5 of Sato is the pressing member of the present application. However, the spring holder 5 or pressing member of Sato does not press the shaft 2a, as is recited in new claim 11. Conversely, the spring holder 5 or pressing member of Sato presses the pressing springs 3 or force providing members, which, in turn, causes the pressing springs 3 to press the shaft 2a. This structure and operation of Sato is different from the recitation of new claim 11, which recites that the at least one force providing member presses the pressing member, which, in turn, causes the pressing member to press the shaft. This structure and operation of the present application allows the entire conveying roller shaft 63 to move upward in a uniform parallel manner such that the occurrence of a variation in the conveying forces can be prevented and the occurrence of the oblique movement of the sheet can be avoided ([0069]).

Claim 12 is dependent upon claim 11 and further recites at least one force providing member which provides a pressure force to said pressing member to press said pressure member against said conveying roller shaft. Clearly, these is no disclosure or teaching in Sato of a pressing member that extends along a length of the shaft and is made of a rigid material and presses the shaft in combination with at least one force providing member that provides a force to the pressing member to press the pressing member against the shaft. For instance, the pressing springs 3 or force providing members of Sato do not provide a pressure force to the spring holder 5 or pressing member to press the pressing member against the shaft, as is recited in new claim 12. Conversely, Sato discloses that the “pressing force is transmitted through four pressing springs 3 . . . to a shaft 2a of the pinch roller 2” (col. 2, lns. 39-42).

New claim 22 is directed to a medium conveying apparatus and recites:

a conveying roller which is arranged as being movable along a thickness direction of a medium when said medium is conveyed; and

a pressing member which extends in an axis direction of said conveying roller and provides a force to a shaft of said conveying roller toward a conveying path of said medium;

wherein a first side of said shaft of said conveying roller is pushed up when said medium is conveyed through said medium conveying apparatus, thereby a first side of said pressing member is pushed up together with said first side of said shaft; an opposite side of said pressing member is also pushed up to approximately a same height as that of said first side of said pressing member so that said force provided by said pressing member does not press a second, opposite side of said shaft. [Emphasis added]

Sato does not disclose that when a first side of said shaft of said conveying roller is pushed up when said medium is conveyed through said medium conveying apparatus, a first side of said pressing member is thereby pushed up together with said first side of said shaft, an opposite side of said pressing member is also pushed up to approximately a same height as that of said first side of said pressing member so that said force provided by said pressing member does not press a second, opposite side of said shaft. Conversely, in Fig. 3, Sato discloses a release state of the printer body in the case of jamming of the print medium sheet in which the entire upper frame 11 is pivoted clockwise by the user to break the connection between a pressing cam 7 and the pressing lever (col. 2, lns. 63-68). Therefore, Sato does not teach, disclose or even mention the situation in which only a first side of the shaft is pushed upward by the medium, as shown in Fig. 11 of the present application and recited in new claim 21.

Sato fails to disclose each and every element of new claims 11 and 22. Applicant respectfully submits that new claims 11 and 22 are not anticipated by Sato and submits that new claims 11 and 22 are in condition for allowance. Further, Applicant respectfully submits that new claims 12-21, which are dependent upon claim 11, and new claims 23-25, which are dependent upon claim 22, are not anticipated by Sato for the same reasons discussed above for claims 11 and 22.

Conclusion

In view of the foregoing Amendment and remarks, Applicant respectfully submits that the present application, including claims 11-25, is in condition for allowance and such action is respectfully requested.

Respectfully submitted,
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